THE IMPLEMENTATION OF QUALITY MANAGEMENT SYSTEM (ISO 9001) IN ANALYSING THE WORKMANSHIPS PERFORMANCE IN SELECTED PROJECTS

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This study is specially dedicated to my beloved Parents, Brothers and Sister for your supports and concerns

Also specially to my Y.R. Lai, for your everlasting love…..

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ABSTRACT

This study describes on the implementation of Quality Management System (ISO 9001) in analysing the workmanships performance in selected projects. Two projects of different nature, which consists of medium cost low rise housing and low medium cost apartments projects selected in ISO 9001 certified organization found to be perform better in workmanships compare to non ISO 9001 certified organization. This is due to the fact that in non ISO certified organization, there are problems related to documentation and management. This is critical as the three most significant factors that contribute to poor construction workmanships identified are poor documentation, poor performance of workers and poor management. Hence, this study indicates that ISO 9001 certified organization could produce more quality workmanships construction projects than non ISO 9001 certified organization. The study reveals fewer defect recorded in ISO certified organization.

ABSTRAK

Kajian ini adalah mengenai pelaksanaan Sistem Pengurusan Kualiti (ISO 9001) dalam menganalisa tahap mutu kerja untuk projek yang terpilih. Dua projek yang mempunyai ciri yang berbeza, iaitu terdiri daripada rumah kos sederhana dan pangsapuri kos sederhana rendah yang terpilih dalam organisasi yang melaksanakan ISO 9001: Sistem Pengurusan Kualiti dan yang tidak melaksanakan ISO. Didapati syarikat yang melaksanakan ISO mempunyai tahap mutu kerja yang lebih tinggi berbanding dengan organisasi yang tidak melaksanakan ISO 9001: Sistem Pengurusan Kualiti. Ini disebabkan tiga faktor iaitu kelemahan dokumen, kelemahan tahap kerja oleh pekerja dan kelemahan pengurusan. Kesemua ini biasanya berlaku di organisasi yang tidak melaksanakan ISO. Umumnya, kajian ini menunjukkan bahawa organisasi yang melaksanakan ISO 9001: Sistem Pengurusan Kualiti mampu menghasilkan tahap mutu kerja yang lebih tinggi berbanding dengan organisasi yang tidak melaksanakan ISO 9001: Sistem Pengurusan Kualiti. Ini terbukti dengan bilangan kecacatan yang dialami/rekod oleh organisasi yang berlaksanakan adalah lebih rendah berbanding dengan yang tidak melaksanakan ISO.

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CHAPTER 1

INTRODUCTION

1.1 Introduction

Construction industry is an economy pillar of our country. It contributes a significant growth to the country Gross Domestic Product (GDP). It plays significant role in Malaysia's economic development. From the year 1992 to 1996, the growth of construction industry increased from 11% to 14%. Nevertheless, the economic crisis that hits Malaysia in the middle of 1996 deteriorates the national income per capita from RM 12,051.00 to RM 11,835.00. Construction industry is highly affected by the crisis. Furthermore, the industry affects the sustainably of many other industries during the crisis. This is due to the chain reaction of the economy cycle. Construction contributes to the growth of many related industries. For instance, the manufacturing of construction's material industry; cement, pipes, sanitary wares, tiles, ready-mix concrete and etc. Besides, the transportation industry also effected during the economy downturn. Moreover, the crisis causes many small players whether of developers, contractors or consultants to halt their businesses and this result in numerous abandoned projects throughout the country. The government realises that the industry is simply too important for the economic development and as a result, the government take steps to pump priming the industry during the period

from year 1996 to 2002. Eventually, it contributed about 2.1% or RM7.10 billion to the GDP in the year 2001 and 2.3% or RM7.28 billion in the year 2002 (Construction Industry Development Council Survey, 2004).

Asides from being an important industry that generates profit to the country, in relation to job creation, construction encourages the development of human resources in Malaysia. Our country trains more than 10,000 construction professionals every year through various universities and institutions locally as well as overseas. Moreover, the government conducts training from time to time through the Construction Industry Development Board (CIDB) in order to keep abreast with the latest information and technology related to construction. As construction plays an important role in human resources development, it creates massive job opportunities within the country. In the year 2000, the industry reports an employment rate of 828,000 people (Construction Industry Development Council Survey, 2004).

Considering the significance of the construction, it is necessary to identify major issues that affecting the efficiency of this sector. The main objectives of any project are improvements in time, cost and quality (Demos, 1999). The poor state of technology adopted by the construction industry in Malaysia as well as fragmented relation between construction parties resulted in sub-standard quality products, higher construction cost and delay time of delivery. Dissatisfaction over contractors' performance in terms of keeping to the quoted price & time and delivering a final product of the required quality has becoming more emerging dispute.

Another setback of the Malaysian construction industry is lack of research and development (R&D) activities to keep abreast of innovation in construction processes and technology. Despite government invests through the Construction Industry Development Board (CIDB) to develop construction expertise and keep abreast with the latest technology, the respond from the private sectors is rather cool.

Lack of commitments of private sectors towards R&D in construction inhibits improvement in the industry. Consequently, when performing sophisticated and complex construction jobs, the dependency on foreigners' technology to complete those jobs, which ended up in higher cost become inevitable. Therefore, there are needs to introduce construction tools in the industry to enhance the skills and processes in order to deliver projects that satisfies client's requirement in terms of time, cost and quality.

As far as quality is concerned, nowadays, more and more management of construction companies focused on quality issue as a competitive edge. Delivering projects that satisfy client requirements has become a main priority in order to maintain business relationships. Quality began to emerge as a key management focus in the United States as early as 1980s (Zeljko *et.al*, 1999). Therefore in meeting the quality challenge, construction companies are adopting new management practices on the continuous improvement of product and service quality.

1.2 Problem Statement

There is an increasing demand towards high quality projects in our country. The number of construction companies engaged in international operations is increasing as trade barriers are progressively removed. The growth of international trade and of multinational companies as well as demand of high quality projects locally have forced the national construction companies to direct attention toward improving quality in order to compete globally and at the same time survived locally. The goal of high quality is common to all countries. This common goal must compete with other national goals amid massive national forces – economic, social and political – that determine the national priorities (Refaat, 1998). Providing

superior quality is rapidly becoming the way for companies to differentiate themselves from competitors and win more projects.

One of the major indicators of construction project performances is quality of workmanship. (Anthony *et.al*, 1997) stated that high quality of workmanship is one of the factors that determined the success of a construction project. Therefore, it is encouraged that the industry in our country should focus more on management of workmanship quality to ensure project's success. However, no current published work addresses any aspects of quality in a way to suit the economic, political, social and technological environment in developing countries, including in Malaysia (Refaat, 1998). Therefore, studies on how to improve construction quality in Malaysia are obvious.

Definition of quality abound. For many years there have been attempts to define the meaning of quality, often in general terms, yet more recently in terms of the formulation of quality through "quality assurance systems" (Refaat, 1998). ISO 9000:2000 – Fundamentals and Vocabulary defines quality as "degree to which a set of inherent characteristic fulfils requirements." This definition concerns satisfying a customer's stated or implied needs. For a building project, for example, the ultimate customer can be the owner, tenant or occupier. Each will have a set of needs to be met. For practical purposes, construction companies will adopt developer or owner as the final customer or client who pays for the design and construction of the project. The stated or implied needs would therefore have to be met by the designer and builder. Another definition, which is simple and has relevance and clarity for projects, is given by the Construction Industry Institute ("Quality" 1990) cited in Refaat (1998) as "conformance to established requirements." In construction, project requirements are initially set by the client and are then translated during planning phase into design and eventually into a project scope. At construction workplace, quality is directed toward the skill of the craftsman, which involves work process.

Hence, the construction industry should develop common standards during construction stage in order to improve work process and eventually deliver satisfactory products. International standards that will have a major impact on the competitiveness of the United States (U.S) construction industry are being created and implemented (Janet *et.al*, 1997). The International Organization for Standardization (ISO) was formed in 1947 to promote the development of standardization; to facilitate the international exchange of goods and services; and to foster cooperation between intellectual, technological, and economic activities. The technical work produced by the ISO is published as international standards. The ISO 9000 series of international standards are being implemented in the engineering and construction industry through requirements by owners for firms to be ISO 9000 series registered to specific standards (Janet *et.al*, 1997).

According to Phenol (1994), the acceptance of ISO 9000 standards in the construction industry is not as wide as in the other industries, such as manufacturing. This is due to some features such as a construction project is usually a unique collection of people, equipment and materials brought together at a unique location under unique weather conditions, while most manufacturing is a system of mass production wherein all of these factors are consistent with producing typical products over and over again and organizational structure of a construction company varies depending on the nature of the project, while the same structure in a manufacturing company is almost unchange. Nevertheless, the fundamental differences between construction and manufacturing do not mean that quality improvement techniques adopted by the latter are not applicable in the former. Rather, efforts should be made to modify quality control and assurances practices in the manufacturing industry for application in the construction industry.

In conclusion, there are different views on definition and component of quality. The questions such as how the quality management system could help the construction industry to improve workmanships, why is quality management important and how does the organization with ISO certification performed in

comparison to organization without ISO require answers. Therefore, the study must be carried out to address these issues.

1.3 Aim and Objectives

The aim of this project is to analyse the workmanships performance of ISO 9001: Quality Management Systems (QMS) implementation in selected projects. The aim of this research can be achieved through the following objectives:

a) To identify common defective workmanship in selected projects
b) To identify factors that contribute to poor construction workmanships
c) To compare the workmanships performance between an ISO 9001: Quality Management System (QMS) certified organization and a non ISO 9001: QMS certified organization for selected projects.

1.4 Scope of Study

Previous investigations had been carried out such as by Janet *et.al* (1997) regarding the development and use of the ISO 9000 series of quality standards in the construction industry. Besides, a study regarding the quality system in accordance to ISO 9000 in construction companies was conducted by Abdulaziz *et.al* (1999). There is even study carried out by Edwin *et.al* (1999) regarding the imposing of ISO 9000 standards on statutory agents. Nevertheless, studies regarding workmanships performance of ISO 9001 implementation in construction projects are never carried

out. Therefore, this research will contribute to how construction workmanships perform with ISO 9001: Quality Management implementation in selected projects.

This study was confined to the following scopes:

a) This study focus on selected projects undertaken by IJM Construction Sdn Bhd and Sepang Megah Sdn Bhd
b) The comparison of workmanships performance between before and after of ISO 9001 implementation is being made

1.5 Methodology

This section discusses methodology of the research that helps to realize the aim of the study in the light of the existing knowledge and investigation evidence. In order to achieve the aim and objectives of this research, the essential stages of methodology are performed. The major processes includes identify problems, establish aim and objectives, literature review, data collection, data analysis and conclusion as shown in Figure 1.1.

The preliminary data for this study are collected through literature review, selected companies' data and the use of a questionnaire survey targeted at construction industry professionals in selected organizations. The literature reviews are conducted through books, internet, and leading construction management and engineering journals. During this stage, the construction process, common defective workmanships in construction projects and the implementation of ISO 9001: Quality

Management System in construction were being identified. The data collected are analyzed and eventually, findings and conclusion are derived based on the analysis.

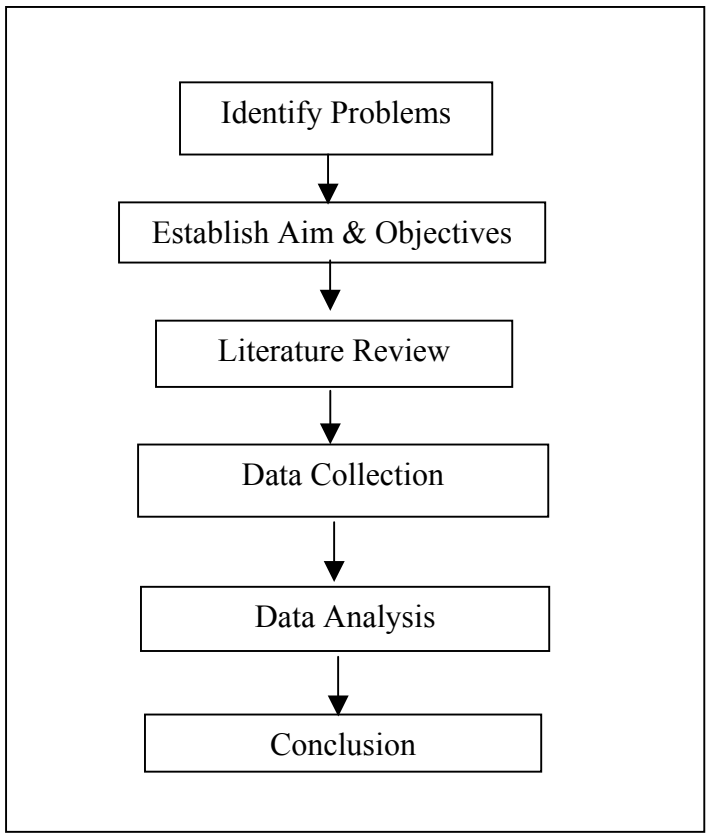

Figure 1.1: Methodology of the Project

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